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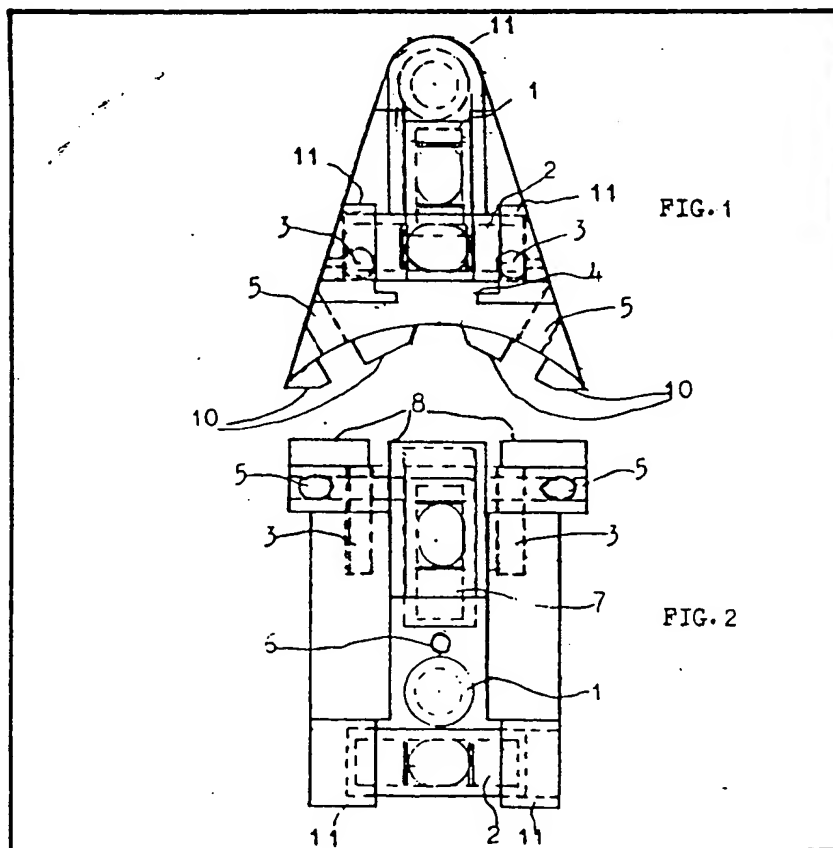
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## (54) Drill lining up attachment

(57) A drill or any other machine tool hand held or semi-hand held is lined up in more than one plane by means of spirit levels (1, 2, 7) incased in a body in such a way that appliance can be positioned in any plane accurately together with a quick accurate positive attachment and detachment leaving drill or machine free to accept any other attachment or embodiment without impairing the function of the drill or machine tool or tools. The device is particularly, useful to industry where any break down requires dismantling a machine to

either remove or repair a broken part. The accuracy of this attachment to a drill or machine will enable parts to be removed or repaired considerably quicker than was previously performed by taking the drill to the job.

Projections 10 are located in slots in the drill body, and adjustment is performed by an eccentric pin (Fig. 10, not shown) located in slots 5, and a screw located in hole 6. The device is secured to the drill by means of a strap the ends of which are located in holes 3. The device may alternatively be secured by means of magnets (drawing No. 2, not shown).



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## SPECIFICATION

## Drill lining up attachment

This invention relates to the use of four spirit level cartridge vials of which has already been patented.

The patent I apply for using these spirit level vials permanently fixed in structure in such a way as to line up a manually hand held drill, power hand held drill and power hand held tools.

- Attachment is fixed to the drills body approximately 10" from tip of twist bit. To fix this attachment accurately to the drill adjustments for the two horizontal planes for individual drills is made and then no further adjustment is required.
- When attachment is set to drill the following drilling accuracy obtained for every inch of hole drilled in depth will be within a tolerance proven .006" i.e.  $2" = .012"$  providing operator maintains holding drill within 1/16" of movement from the drills true position either way accuracy of .006" per inch will be achieved this tolerance is arrived at by dividing .0625" by 10 = .0062" this accuracy makes a hand held power drill or machine a semi robot i.e. drill is taken to the job were previously job was taken to fixed drill, providing job or workpiece is set true in the two horizontal planes. Lining up attachment will be used to set job up in these planes before attaching this lining up device to hand held drill or machine.

- Accordingly the invention provides a body or structure, in one plane two spirit vials are fixed in body in the form of a crucifix horizontally for vertical drilling.

- For ligning up drill in the horizontal plane a spirit level vial is embedded in the same structure accurately at 90° in two directions to the first two vials.

- The fourth spirit level vial is for drilling holes at different angles which is attached to the side of the structure.

- In order that the invention may be readily understood, embodiments thereof will now be described in more detail, by way of example, with reference to the accompanying drawings No. 1 2 Sheets in which:

- Figure 1 plan view of the spirit level embodiment in the vertical plane;

- Figures 2, 3, 4 and 5 are prospective views of Figure 1 turned 90° in each projection;

- Figure 6 shape of spirit level vial in two views;

- Figure 7 adaptor for fixing lining up attachment to other types of drills;

- Figure 8 spring loaded ball assembly;

- Figure 9 perspective view of Figure 7 turned 90°;

- Figure 10 eccentric adjusting spindle;

- Figure 11 side view of embodiment fixing strap;

- Figure 12 perspective view of Figure 11 turned at 90°;

- Figure 13 view of variable angle embodiment showing spirit level vial fixed in embodiment;

- Figure 14 perspective view of Figure 13 turned 90° and

- Figure 15 perspective view of Figure 14 turned 90°.

I now describe numbers for each Figure marked on drawing No. 1 2 Sheets illustrating the make-up of the preferred embodiment.

- Figure 1, 1 and 2 spirit level vial cartridge, 3 slotted parallel hold for fixing strap to embodiment, 4 parallel female slide, 5 two holes for locating eccentric pin for adjusting attachment in one plane when fixed to drill, 10 is for locating embodiment in the bottom of slots which are incorporated in the embodiment of electric drill.

- Figure 2, 6 countersunk screwed hole for adjusting attachment in the opposite plane when fixed to drill 8 3 pads enabling device to be used for setting job or workpiece before fixing attachment to drill, 7 spirit level vial for lining drill up in the horizontal plane, vial being fixed in embodiment giving full vision when drill is turned up to 90° to the left and up to 90° to the right using fixed drills handle on drill as datum for corner drilling.

- Figure 3, 27 5 mm dia. hole for attaching device in drills chuck for setting up drill in vertical plane enabling device to be adjusted to its true position when attached to drills body.

- Figure 4, 9 hole for locating variable angle assembly.

- Figure 7 and 9, 14 parallel male slide, 13 hole for locating spring loaded ball assembly as shown in Figure 8, 12 5 mm dia. hole for attaching on to drills depth gauge rod.

- Figure 8, 15 ball bearing, 16 spring, 17 cage for holding 15 and 16 in an assembly.

- Figure 10, 18 and 19 eccentric to one another .015" to give a positional movement of .030", 20 screwdriver slot for turning to the left or right.

- Figure 11, 21 rounded end of strap for sliding into slot 3 as shown in Figure 1 on sheet 1 of drawing 22 and 23 metal tensioning device of strap.

- Figure 12 perspective view of Figure 11 turned at 90°.

- Figure 13, 25 preferred embodiment for spirit level vial 26 Locking sprigot formed on spindle 27 for locking the assembly when fitted in hole 9 as shown in Figure 4 and 5 Sheet 1 of Drawing No. 1.

- Figure 14, 24 spirit level vial.

- Figure 15 a perspective view of Figure 14 turned 90°.

- 8 B.A. flat headed set screw  $\frac{1}{2}"$  long (not shown on drawing) for adjusting attachment when fixed to body of drill used in conjunction with 6 as shown on Drawing No. 1 Sheet 1 Figures 2, 3, 4 and 5.

## Drawing No. 2

## Figures 1—6

- In order that the invention may be readily understood, embodiments thereof will now be described in more detail, by way of example, with reference to the accompanying drawings, in which:

Figure 1, 5 two hardened locating pins, 7 three

pads enabling device to be used for setting job or workpiece up before fixing attachment to drill, 10 two magnetic side plates.

Figure 2, 1, 2 and 3 spirit level vial cartridges,

- 5 4 plastic spacing plate for locating two hardened pins, 10 magnetic side plates.

Figure 4, 6 magnetized magnet core.

Figure 5, 8 five countersunk holes for locking magnet base plates permanently to either side of embodiment of drill, or for fixing one base plate to the embodiment of the handle of drill were applicable, 9 two locating holes for the two hardened pins as shown in Figures 1, 3 and 4.

Figure 6, as Figure 5 turned 90°.

## 15 Claims

1. Spirit level vial cartridges suitably embedded in plastic body in such a way as to line up a hand held manually operated drill, power operated drill or hand held manually operated tools as shown in

- 20 Figures 1—15 on Sheet 1 and 2 of drawings supplied.

2. Spirit level vial cartridges according to claim 1 embedded in suitable plastic body in such a way as to line up a hand held manually operated drill, or power operated drill to achieve an accuracy of

- 25 drilling per inch within a tolerance of .0062".

3. Spirit level vial cartridges according to claim 2 fixed permanently in drills body in the vertical plane and horizontal plane for the purpose of

- 30 lining up hand held drill and manually operated held drill giving a tolerance of every inch of hole drilled to within a tolerance of .0062".

4. Spirit level vial cartridges according to claim 3 using spirit level vial cartridges embedded in

- 35 plastic body and fixed to a hand held manually operated drill, power operated drill or hand held manually operated tools attached by any of the following ways; by male and female dovetail taper slide, by parallel male and female dovetail slide, 40 male and female parallel slides, by spring clip or clips, by ball spring clip or clips, by round pin, by spring clip or clips, by square pin and clip and clips, by elongated pin and spring clip or clips.

5. Spirit level vial cartridges according to claim

- 45 1—4 with permanent magnet suitably embedded in plastic body for attachment to the drills body or detachable handle by means of embedding magnetic base plate permanently fixed in body or handle as shown in Figures 1—6 on Drawing No. 50 2 supplied.

6. Spirit level vial cartridges according to claims 1—5, using a bulls eye spirit level element embedded in suitable plastic body for drilling holes in the vertical plane and for lining up tools in the vertical plane together with spirit level vial cartridge embedded in the same body at right angles to bulls eye element for horizontal drilling or lining up manually operated and power operated drill and manually operated tools and power operated tools.

- 60 7. Spirit level vial cartridges according to claims 1—6, a bulls eye element suitably embedded in body of manually operated and power operated hand held drills and hand held tools to line preceding tools in the vertical plane together at 90° from the bulls eye embodiment suitably embedded in drills body or attached separately one bulls eye in one plane, one spirit level cartridge in the horizontal plane.

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DRAWING NO. 1.  
2 SHEETS.

SHEET 1

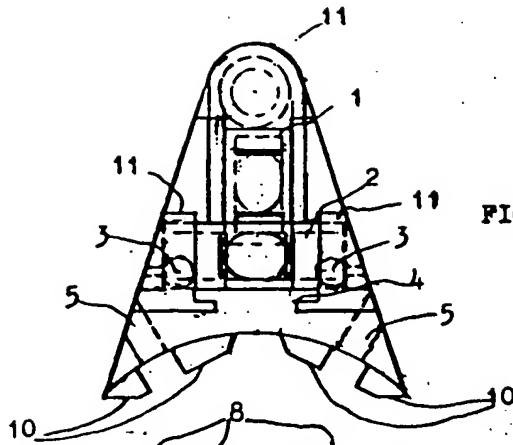


FIG. 1

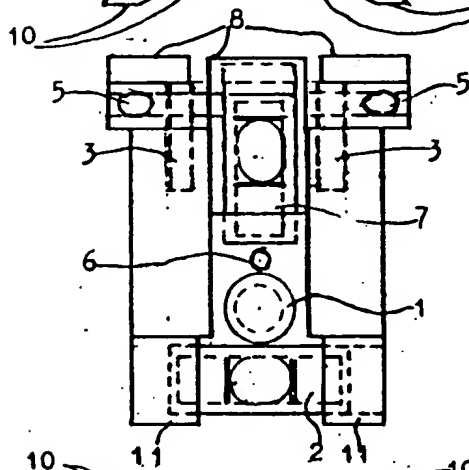


FIG. 2

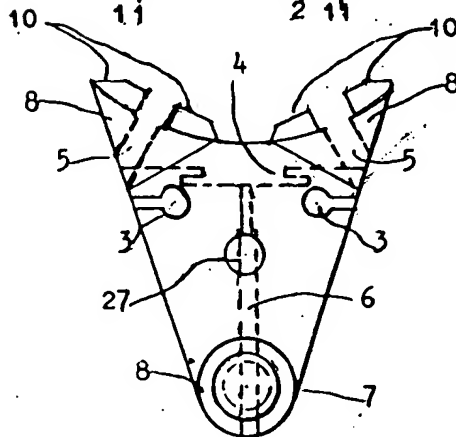


FIG. 3

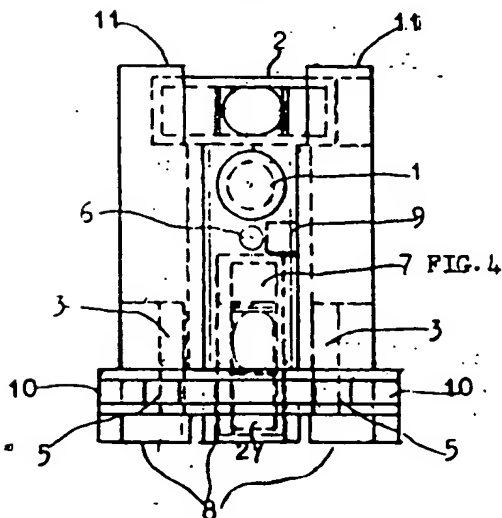


FIG. 4

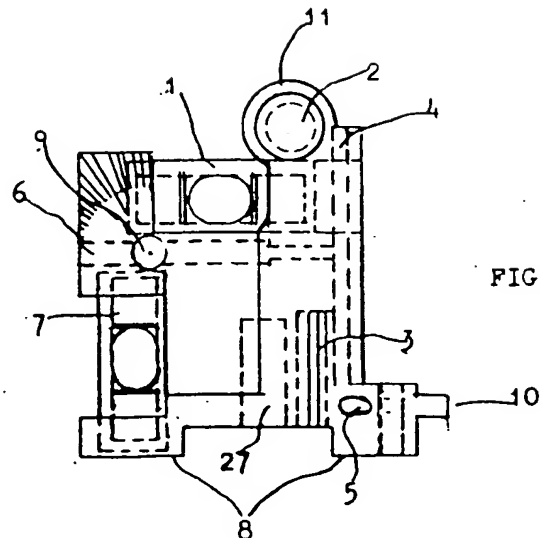


FIG. 5



FIG. 6.



1. 2. 7.

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DRAWING NO. 1.

2 SHEETS.

SHEET 2

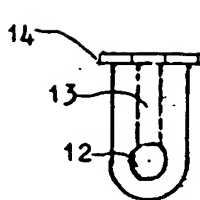


FIG. 7

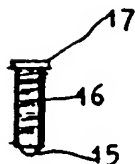


FIG. 8

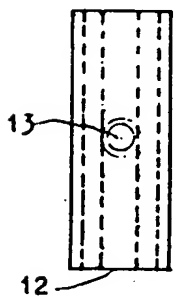


FIG. 9

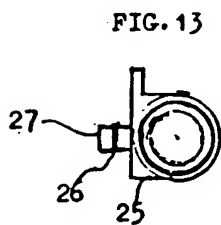


FIG. 13

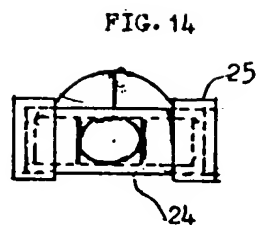


FIG. 14



FIG. 10

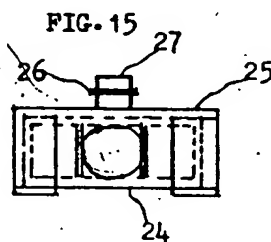


FIG. 15

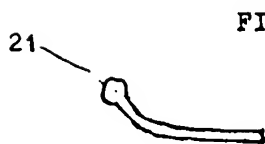


FIG. 11

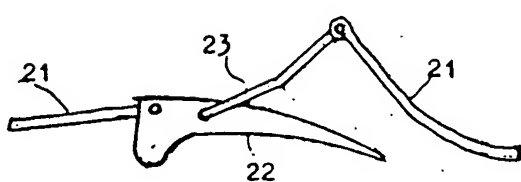
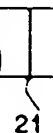
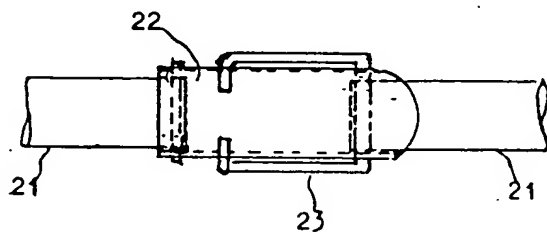
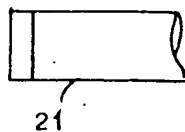


FIG. 12



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DRAWING NO. 2.

1 SHEET.

SHEET 1.

FIG. 1

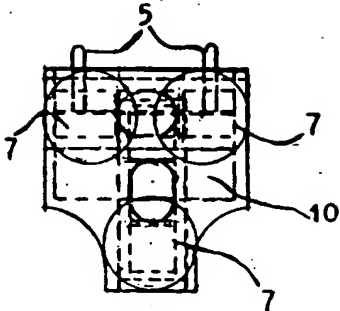


FIG. 6



FIG. 2

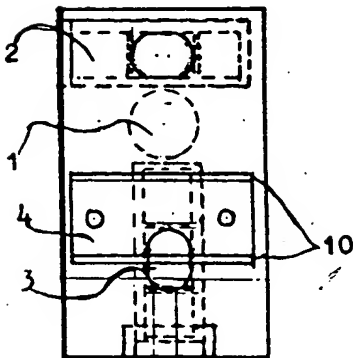


FIG. 5

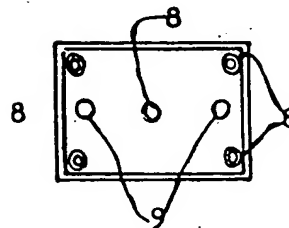


FIG. 3

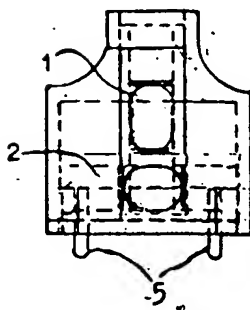


FIG. 4

